connection with the local industries. One of the rooms of the Zoological Museum at the University College of Liverpool is devoted to a permanent fisheries collection, illustrating the local fishing industries. The committee has thus proved that success attends the co-operation of the work of men of science in University Colleges with that of technical instruction, and their action should lead to the development of a similar policy in other cities.

SCIENTIFIC SERIALS.

Symons's Meteorological Magazine, February.—The pressure of the wind, by R. H. Curtis. In this paper the author deals with the wind-pressure from the point of view of the engineer and its effect upon structures, rather than from a purely meteorological standpoint. After the time of the collapse of the Tay Bridge, in December 1879, a good deal of attention was paid to this subject, and a committee was appointed to consider the question of wind force on railway structures. It estimated that the greatest pressure likely to be experienced over a large surface was 56 lbs. per square foot, but that, to ensure safety, bridges and similar structures ought to be built to withstand four times that pressure. This conclusion has probably led to an extravagant expenditure of money, as the records of improved and well-exposed anemometers have recently shown that this estimated pressure of 56 lbs. was greatly in excess of anything likely to be experienced. It is true that an Osler's pressure anemometer at Liverpool Observatory registered the extraordinary pressure of 90 lbs. on the square foot in March 1871. But this exaggerated record must have been due to a succession of impulses upon the pressure plate, as a wind force of less than 60 lbs. per square foot would, in all probability, have sufficed to carry away the anemometer itself. The author has paid much attention to this subject and will continue his interesting discussion.—Weather records at Slough, by Mr. R. Bentley. Instrumental observations were begun there by Sir William Herschel in the latter part of the eighteenth century. Mr. Bentley communicates classified rainfall values for 1874-1899, and has collected non-instrumental records of interesting phenomena in South Buckinghamshire from a very remote period.

American Journal of Science, February.—Apparent hysteresis in torsional magnetostriction and its relation to viscosity, by C. Barus. A differential method is employed, in which the two identical wires of iron or nickel to be compared are fastened coaxially one above the other, a mirror being attached between them. Accidental temperature effects are avoided by keeping the lower wire submerged in a tube of flowing water. A current can be sent either round or through the wire, so as to place the wire in either a longitudinal or circular field, the effect to be observed showing itself in a shifting of the fiducial zero. The phenomena are independent of the direction of the current and a larger angle of twist does not appear to magnify them. The results, which are somewhat complex, can be understood if magnetisation be regarded as a means of shaking up the molecular mechanism, and thus to produce temporary molecular instability or momentarily very low viscosity.—The dinosaurian genus Creosaurus, Marsh, by S. W. Williston. A description of a shoulder girdle and arm of a carnivorous dinosaur obtained from a deposit in the Freeze Out Mountains, Wyoming. The fossil is well differentiated from Allosaurus, although occurring with remains which may possibly belong to that genus.—The stereographic projection and its possibilities from a graphical standpoint, by S. L. Penfold. A continuation of a previous paper. The graphical methods are applied to some solutions of spherical triangles, in determining geographical distances, and to map projection.—On the melting point of gold, by L. Holborn and A. L. Day. These results have been already noted in the January number of *Wiedemann's Annalen*.—On some new mineral occurrences in Canada, by G. Chr. Hoffmann. The minerals described are lepidolite, newburyite, struvite, schorlomite, danalite, spodumene and uranophane.

Bulletin of the American Mathematical Society, February.—The seventh annual meeting of the Society was held in New York City, on December 28, 1900. Several important changes in the organisation of the Society were made, the membership of which has now reached the fine total of 357 names. Prof. F. N. Cole gives a brief recapitulation of advance since the foundation of the Society, and fully records the proceedings at the Christmas gathering. The titles of seventeen papers are given and abstracts of many of them are here printed. On some birational transformations of the Kummer surface into itself, by Dr. J. I. Hutchinson, is a paper read at the meeting. Another paper that was read is entitled "Theorems concerning positive definitions of finite assemblage and infinite assemblage," by C. J. Keyser. A third paper, by W. B. Ford, is entitled "Dini's method of showing the convergence of Fourier's series and of other allied developments." Short notice follows of Fehr's Application de la méthode vectorielle de Grassmann à la géométrie infinitésimale, by E. B. Wilson, and of the Annuaire pour l'An 1901, publié par le Bureau des Longitudes, by Prof. E. W. Brown. Notes and new publications as usual.

SOCIETIES AND ACADEMIES.

London.

Royal Society, February 21.—"An Investigation of the Spectra of Flames resulting from Operations in the Open-hearth and 'Basic' Bessemer Processes." By W. N. Hartley, F.R.S., Royal College of Science, Dublin, and Hugh Ramage, A.R.C.Sc.I., St. John's College, Cambridge.

Three papers on "Flame Spectra," by one of the authors, were published in the *Philosophical Transactions* for 1894. Parts I. and II., "Flame Spectra at High Temperatures," and Part III., "The Spectroscopic Phenomena and Thermochemistry of the Bessemer Process."

The spectroscopic results were quite different from those previously obtained by observing the "acid" process, as the continuous spectrum was much stronger. Many lines and bands new to the Bessemer flame spectra were observed.

Twenty-six plates of spectra were photographed. The spectra increase in intensity as the blow proceeds in the first stage, and this can only result from a corresponding increase in the temperature of the bath of metal and of the flame.

Considerable difficulty was experienced in the identification of some of the lines and bands; some were due to uncommon elements, and others were relatively much stronger than a study of the oxyhydrogen flame and other spectra of the same metals had hitherto shown.

Conclusions.

(1) Line spectra are not observed in the open-hearth furnace. This is attributed mainly to the fact that the atmosphere of the furnace is oxidising, and under these conditions, as Gouy has shown (*Phil. Mag.*, vol. ii., 1877, p. 156), only sodium gives a spectrum approaching in intensity that which it gives in a reducing flame.

(2) The phenomena of the "basic" Bessemer blow differ considerably from those of the "acid" process.

First, a flame is visible from the commencement of blowing. The immediate production of this flame is caused by carbonaceous matter in the lining of the vessel, its luminosity is due partly to the volatilisation of the alkalies, and to the incandescence of lime dust carried out by the blast.

Secondly, volatilisation of metal occurs largely at an early period in the blow, and is due chiefly to the smaller quantity of silicon present.

Thirdly, a very large amount of fume is formed towards the close of the second period. The flame is comparatively short, and the metallic vapours carried up are burnt by the blast.

Fourthly, the "over blow" is characterised by a very powerful illumination from what appears to be a brilliant yellow flame: a dense fume is produced at this time composed of oxidised metallic vapours, chiefly iron. The spectrum is continuous, but does not extend beyond wave-length 4000. The light emanates from a torrent of very small particles, liquid or solid, at a yellowish-white heat.

Fifthly, the spectra of flames from the first stage of the "basic" process differ from those of the "acid" process in several particulars. The manganese bands are relatively feeble, and lines of elements, not usually associated with Bessemer metal, are present. Lithium, sodium, potassium, rubidium and cæsium have been traced mainly to the lime used; manganese, copper, silver and gallium to the metal.

(3) Differences in the intensity of metallic lines. The intensity of the lines of any metal varies with the amount of the metal in the charge, but they are also to be traced to changes in temperature; as the temperature of the flame rises, some lines

fade almost away, others become stronger. The changes are more marked in the arc spectrum and still more in the spark spectrum of iron.

A new line of potassium with variable intensity. This line, wave-length approximately 4642, varies in intensity within somewhat wide limits. In a given flame its brilliancy is increased by diminishing the quantity of metallic vapour in the flame: this does not appear to depend altogether on the weakening of the continuous spectrum; it is probably due, in part at least, to the increased freedom of motion permitted to the molecules of the metal.

February 21.—"Notes on the Spark Spectrum of Silicon as rendered by Silicates." By W. N. Hartley, F.R.S.

March 7.—"On the Composition and Variations of the Pelvic Plexus in *Acanthias vulgaris*." By Mr. R. C. Punnett, B.A., Gonville and Caius College, Cambridge. Communicated by Dr. H. Gadow, F.R.S.

"Preliminary Communication on the Œstrous Cycle and the Formation of the Corpus Luteum in the Sheep." By F. H. A. Marshall, B A. Communicated by Prof. J. C. Ewart, F.R.S.

Physical Society, March 8.—Dr. R. T. Glazebrook, foreign secretary, in the chair.—A paper on a theory of colloidal solutions was read by Dr. F. G. Donnan. Assuming that a colloidal solution is not a true molecular intermixture, but a two-phase system consisting of exceedingly minute aggregates of the colloid distributed throughout the solvent, the object of the paper was to examine how such a state of affairs might be imagined to come about. By applying the fundamental notions of Laplace's theory of capillary forces to the statical (mechanical) equilibrium at the interface, it was shown that under certain conditions matter in bulk might disintegrate into a homogeneous liquid medium and yet not attain a state of molecular division, remaining distributed in the form of very thin filaments or sheets whose thickness is comparable with the sphere of molecular attraction. True solution, or molecular intermixture, is regarded, on the other hand, as arising from the kinetic flux of molecules across the interface. Dr. Gladstone said that the study of colloids was one which had been too much neglected. It involves both a knowledge of physics and of chemistry. A colloid is an unstable body and is always altering its composition. Water of combination is given off on heating, even if the surrounding atmosphere is saturated, and the colloid cannot take up the water again. It is impossible to separate colloids and crystalloids—they merge into one another. The transition forms are not uncommon. Dr. Lehfeldt asked if it had been proved that colloids have osmotic pressure. Prof. Threlfall said that in colloidal solutions some of the substance was not in suspension. Dr. Martin had filled a filter with silicic acid under pressure, and found that it allowed sugar solution to pass through but stopped colloidal solutions. The author had used opacity as a test for colloids, but silicic acid could be got transparent. There are two kinds of opalescence—one cannot be removed and exists because the substance is a two-phase system; the other can be removed with difficulty by filtering, and leaves a transparent substance. The want of transparency should be used cautiously as an argument. Dr. Donnan, in reply to Dr. Gladstone's remarks on the transition from crystalloids to colloids, said that a substance might be a crystalloid with one medium and a colloid with another. In reply to Dr. Lehfeldt, he said that the only evidence in favour of osmotic pressure of colloids is that colloidal solutions diffuse. He agreed with Prof. Threlfall that opacity should be used carefully as an argument, but stated that his theory referred to a two-phase system.—Mr. Appleyard then exhibited three pieces of apparatus. The first was a slide wire bridge for measuring conductivities of wires. The slide wire instead of forming two arms of the bridge forms only one, and the length used is proportional to the conductivity to be measured. If the arm which contains the standard wire used is altered, it becomes necessary to alter the divisions of the scale on the slide wire. This is done by a mechanical arrangement. The second piece of apparatus was a mechanical gauge for measuring the diameters of spheres. The sphere to be measured is placed between a metal face plate and a piece of glass at the end of the short arm of a pivoted lever. The end of the long arm of the lever moves over a graduated scale which is calibrated to show directly the diameter of the sphere. The third piece of apparatus was a galvanometer fitted up for lamp and scale work. The illumination was produced by a 4 volt ¼-candle power lamp, and it was shown that very good results could be obtained from this by using a large condensing lens. Prof. Threlfall said he had usually used a straight piece of the lamp filament itself, instead of using the lamp in conjunction with a cross wire.—A paper, by Prof. R. W. Wood, on the production of a bright line spectrum by anomalous dispersion and its application to the flash spectrum, was postponed until the next meeting at Burlington House, when the subject will be experimentally illustrated by Mr. Watson.—The Society then adjourned until March 22, when the meeting will be held in the chemical laboratories of University College, London.

Geological Society, February 15.—Annual General Meeting.—J. J. H. Teall, F.R.S., president, in the chair.—It was stated that, the Council having undertaken to supply to the Regional Bureau of the International Catalogue of Scientific Literature the material referring to geology published in the British Islands, Mr. C. Davies Sherborn had been appointed to prepare and edit the catalogue-slips necessary for that purpose. The reports having been adopted, the medals and funds of the Society were awarded as already announced (p. 402)—The president then proceeded to read his anniversary address, in which he first gave obituary notices of several Fellows and Foreign Members deceased since the last annual meeting. He then dealt with the evolution of petrological ideas during the nineteenth century, especially as regards the igneous rocks. The discussions as to the origin of basalt and granite were referred to, and it was shown that the controversy regarding the latter rock had contributed largely to the clearing up of our ideas as to the nature of plutonic phenomena. The solution-theory propounded by Bunsen was especially emphasised, and its modern developments were briefly sketched. It was suggested that the next great advance will, in all probability, be the result of experiment, controlled by the modern theory of solutions, and carried out for the purpose of testing the consequences of that theory and discovering the modifications which may be necessary to adapt it to igneous magmas. The bearing which recent work on alloys had on petrographical problems was also referred to. The problem of the origin of petrographical species was next considered, and the growth of ideas on the subject briefly sketched. It was pointed out that although magmatic differentiation is accepted by many as an important factor in producing different kinds of igneous rocks, it does not rest on any assured experimental basis. Differentiation dependent on, or connected with, the crystallisation of definite minerals was reviewed more favourably; but it was pointed out that all theories of differentiation which are based on unaided molecular flow are subject to the criticism that the time required to effect any important differentiation appears to be too great. Reference was also made to recent work on the modification of igneous magmas by the inclusion and assimilation of rocks through which they pass; and the conclusion was reached that the origin of species, so far as igneous rocks are concerned, is a problem the final solution of which has been handed on by the nineteenth century to its successor.

Royal Astronomical Society, March 8.—Dr. J. W. L. Glaisher, F.R.S., president, in the chair.—Lantern slides were exhibited of photographs of the region of the new star in Perseus, taken by Mr. Stanley Williams. One, taken on February 20, only twenty-eight hours before its discovery, showed no trace of the Nova, though containing stars to about the twelfth magnitude.—Dr. Lockyer showed photographs of the spectrum of the new star, taken at South Kensington. The spectrum showed dark lines of hydrogen, and also broad, bright hydrogen bands displaced towards the red, apparently indicating two sources of light and enormous relative velocities. The spectrum showed the existence in the star of hydrogen, calcium, iron, &c.—Mr. McClean exhibited an enlargement from his photograph of the spectrum, in which he could find no trace of helium. The spectrum of the Nova resembled that of Sirius, but with bright bands of hydrogen; it was also much like that of Nova Aurigæ.—A photograph of the spectrum taken at Stonyhurst was also shown.—Mr. Newall exhibited and explained his photographs of details of the spectrum, taken at Cambridge.—Dr. Rambaut gave results of observations made at Oxford. The colour of the Nova was first of a bluish-white, becoming redder as it diminished in light.—The Astronomer Royal showed photographs taken at the Royal Observatory, where observations were made of the magnitude, which showed a gradual but not perfectly regular, diminution of brightness from 0·5 magnitude on February 25 to 3·1 magnitude on March 6.—Mr. Bellamy brought forward a series of measures of the position of the Nova, from a photograph taken at the University Observatory, Oxford.—Mr. Bryan Cookson gave a description, illustrated with lantern slides, of a new photographic zenith telescope, constructed with a view to the determination of the constant of aberration. The essential feature of the ordinary zenith telescope is the *level*, but in this new form of the instrument there is no level, verticality of the axis being obtained by floating the supports of the telescope in a bath of mercury. Mr. Cookson also gave some preliminary results obtained with the new instrument.—Nine other communications were taken as read.

Linnean Society, February 21.—Dr. A. Günther, F.R.S., vice-president, in the chair.—Mr. R. Morton Middleton exhibited and made remarks on a series of Virginian oysters of certified ages.—Mr. H. E. Smedley exhibited with the aid of the lantern a series of photomicrographs illustrating the histology of various types of plants. Mr. Smedley also showed some fossil remains of *Balaena* from the Crag, with other undetermined bones.—A paper by Prof. E. Ray Lankester, F.R.S., and Mr. R. Lydekker, F.R.S., on the affinities of *Ælurophus melanoleucus*, was read by Mr. Lydekker. The authors based their views on an examination of a cast of the skull presented by the late Prof. Milne-Edwards to the Oxford University Museum, and certain limb-bones and a fine skull in the Natural History Museum, South Kensington, all of which were described. The conclusions arrived at were that in important and distinctive points *Ælurophus* agrees with *Ælurus* and *Procyon* (more closely with the former) and differs widely from *Ursus*, notwithstanding its external resemblance to the last named. The salient points in the anatomy of each were discussed, and the resemblances and differences made clear by a series of photographs which were exhibited.—A paper by Monsieur A. Gruvel, entitled "Étude d'une espèce nouvelle de Lepadides," was communicated by Prof. Howes, who gave an abstract of the same, and exhibited drawings of the new species (*Scalpellum maximum*) described by the author. The paper also dealt with examples of *Poecilasma carinatum* which were found attached to a specimen of the *Scalpellum*.

Anthropological Institute, February 25.—Prof. Haddon, F.R.S., president, in the chair.—Mr. H. Ling Roth read a paper on Maori tatu and moko. The paper, which was fully illustrated by lantern slides, opened with an explanation of the difference between tatu and moko; by the former is understood production of a pattern by puncturing the skin and depositing colouring matter under it; in the final state the skin is perfectly smooth. In moko, on the other hand, the instrument is a chisel and leaves slight grooves in the skin after the wound is healed. The Maoris made use of spirals and coils in their patterns, differing in this respect from other Polynesians. The instrument, which is really a miniature hoe, is placed on the skin and tapped with a mallet. The operation is extremely painful, involving great loss of blood, so that only a small portion of the pattern can be done at once. The portions of the body operated on are the face and thighs, and in the case of the latter the effect is that of an ornamental pair of drawers. The operation was begun at puberty and small additions were continually made, especially after a successful fight or on similar important occasions. The most elaborately tatued was most favoured by the fair sex. In some cases post mortem moko was employed to increase the value of a specimen.—Major-General Robley presented a drawing of a Maori war dance.

EDINBURGH

Mathematical Society, March 8.—Some elementary theorems regarding surds, by Prof. Chrystal.—Note on the application of complex integration to the equation of conduction of heat, by Mr. John Dougall.

PARIS.

Academy of Sciences, March 4.—M. Fouqué in the chair.—On the new star which recently appeared in the constellation of Perseus, by M. J. Janssen. In stars such as the sun, in which the temperature is too high for water to exist, as the temperature falls there must come a point at which combination of the hydrogen and oxygen will suddenly take place. This would be accompanied with an enormous and sudden increase of temperature and hence of light production, and this is put forward as a possible explanation of the appearance of a new star. At the moment of combination, on account of the pressures and temperatures developed, the rays of the spectrum ought to be considerably enlarged, and this is precisely what appears in the spectra obtained at Meudon.—Meridional sight with cylindrical mirror, by M. G. Lippmann. A description of an apparatus for measuring right ascensions, in which the meridian is shown as a luminous line projected upon the sky. With this apparatus a cross wire in the eyepiece is rendered unnecessary.—On the preparation and properties of sulphammonium, by M. Henri Moissan. The three varieties of sulphur were submitted to the action of liquefied ammonia at -80° C.; no reaction takes place, but on allowing the temperature to rise slowly solution occurs with sulphur insoluble in carbon bisulphide at -38°, with prismatic sulphur at -15°·5, and with the octahedral variety at -11°·5. From this solution a new compound, sulphammonium, can be obtained, of a dark red colour, and having at -23° the composition $(NH_3)_2S$, at 20°, $(NH_3)_2S.2NH_3$, which is completely dissociable at the ordinary temperature and pressure, and which possesses the property of being able to add sulphur in the cold to a large number of simple and compound bodies.—A method of estimating sulphides, sulphydrates, polysulphides and hyposulphites coexisting in solution, in particular in certain mineral waters, by M. Armand Gautier. The method proposed is based upon the facts that sulphhydrates, distilled in a vacuum, give up all their sulphuretted hydrogen in excess of that required to form the monosulphide, and this, again, yields the whole of its sulphur on distilling in a current of carbon dioxide. Test analyses are given of a water prepared synthetically and of the mineral water of Labassère.—On germination in distilled water, by MM. P. P. Dehérain and Demoussy. Seeds can form their roots and commence their development in distilled water absolutely deprived of lime, although this development is arrested when the distilled water contains unweighable traces of copper.—A phototherapic apparatus without a condenser, by MM. Lortet and Genoud. The size of the active zone in the apparatus described may be varied from 1 to 6 cm. in diameter, the zone from an apparatus using a condenser being much smaller. The time necessary for the exposure is also reduced to one-fourth of that required in the older form of apparatus.—Observations on the brightness of the planet Eros made at the Observatory of Lyons, by MM. Guillaume, Le Cadet and Luizet. The results are shown in the form of a curve having a period of about 2h. 50m., the total variation of light being about two magnitudes.—On the variation of brightness of the planet Eros, by M. M. Luizet. A mathematical discussion of the results of the previous paper.—Variations of brightness of the planet Eros, by M. Baillaud. From observations made at the Observatory of Toulouse, the period between the times of maximum brightness is found to be the same as between the minima, 2h. 23m.—The elements of the system formed by the double planet Eros, by M. Ch. Andre. The time of revolution of the satellite of Eros is nearly that of Phobos, the eccentricity is nearly equal to that of the lunar orbit, and the mean density of the system is of the order of that of Mars.—On the period of the variability of brightness of the planet Eros, from determinations made at the Observatory of Toulouse, by M. L. Montangerand. The period deduced is 2h. 22m.—On the new star in Perseus, by M. M. Luizet. A comparison of the magnitude of the new star with α-Taurus, β-Gemini, α-Perseus, and γ-Cassiopeia.—Observations on the new star in Perseus, by M. H. Deslandres. A detailed study of the spectrum of the new star (see p. 477).—On a certain surface of the third order, by M. D. Th. Egorov.—On complete systems of partial differential equations, by M. Edmond Maillet.—On the propagation of the Hertzian oscillations in water, by M. C. Gutton. It is shown that the wave-length remains the same when the resonator and the transmitting wires are immersed in water.—The law of transparency of matter for the X-rays, by M. L. Benoist.—On the induced radio-activity provoked by radium salts, by MM. P. Curie and A. Debierne. The experiments cited show that the induced radio-activity is transmitted by the air, and this is in agreement with the hypothesis of Rutherford.—On a new method for determining the atomic weight of uranium, by M. J. Aloy. The nitrate is decomposed, and the ratio of nitrogen to uranium nitrate determined.—Thermal study of the ammoniacal aluminium chlorides, by M. L. Baud.—On a new silicide of cobalt, by M. Paul Lebeau. The new silicide, which has the composition CoSi, is obtained by heating metallic cobalt and copper silicide in the electric furnace.—On the mixed organo-magnesium compounds, by M. V. Grignard (see p. 477).—On an isomeride of anethol and on the constitution of the latter, by MM. Behal and Tiffeneau. Anisol, treated with magnesium-methyl iodide, gives a propenyl anisol and a polymer. The composition of the ketone formed from this on hydrolysis leads to the conclusion that anethol possesses a propylenic chain.—On the phenylhydrazones of glucose and their multirotation, by MM. L. J. Simon and H. Bénard.—A general method for the synthesis of the naphthenes, by MM. Paul Sabatier and J. H. Senderens. At 170° to 200° all the hydrocarbons tried were readily hydrogenised by reduced nickel. Details are given of the preparation of the hexahydro-compounds of toleune, orthoxylene and its meta- and para-isomers, ethyl benzene, mesitylene, pseudocumene and propylbenzene. —The specific and latent heat of fusion of ethylene glycol, by M. de Forcrand.—On the constitution of gentianose, by MM. Ed. Bourquelot and H. Hérissey.—The treatment by oxygen at atmospheric pressure of persons poisoned by carbon monoxide, by M. N. Gréhaut. The elimination and disappearance of the poison is considerably accelerated by the use of oxygen, which thus becomes essential in the treatment of cases of carbon monoxide poisoning.—The analogies between the diastatic actions of colloidal platinum and those of organic diastases, by M. G. Bredig.—The coagulating properties of mucus and its origin and consequences, by MM. Charrin and Moussu.—On a differential histochemical reaction of leucocytes and on the experimental production and the nature of the chromatophile granulations of its cells, by M. Henri Stassano.—New observations on the organisation of the Gasteropods, *Pl. Quoyana* and *Pl. Beyrichi*, by MM. E. L. Bouvier and H. Fischer.—On the different cells of the ovary which intervene in the formation of the egg in insects, by M. A. Lécaillon.—On the mechanism of the propulsion of the tongue in amphibians, by M. Marcus Hartog.—On the geotropism of the roots of the vine, M. J. M. Guillon.—On the discovery of a glossopterian flora and of the reptiles *Pareiasaurus* and *Dicynodon* in the upper Permian deposits of the north of Russia, by M. V. Amalitzky.—The tertiary and quaternary deposits of the valley of Bellegarde, by M. H. Douxami.

DIARY OF SOCIETIES.

THURSDAY, March 14.

Royal Society, at 4.30.—The Action of Magnetised Electrodes upon Electrical Discharge Phenomena in Rarefied Gases: C. E. S. Phillips.—The Chemistry of Nerve-degeneration: Dr. Mott, F.R.S., and Prof. Halliburton, F.R.S.—On the Ionisation of Atmospheric Air: C. T. R. Wilson, F.R.S.—On the Preparation of Large Quantities of Tellurium: E. Matthey.

Royal Institution, at 3.—Greek and Roman Portrait Sculpture: Prof. Percy Gardner.

Mathematical Society, at 5.30.—On the Composition of Group-Characteristics: Prof. Burnside, F.R.S.—On the Use of Cauchy's Principal Values in the Double Limit Problems of the Integral Calculus: G. H. Hardy.—Some Algebraical Identities of Simple Arithmetical Application: Prof. Elliott, F.R.S.

Society of Arts (Indian Section), at 4.30.—The Growth and Trend of Indian Trade—a Forty Years' Survey: H. J. Tozer.

Institution of Electrical Engineers, at 8.—Some Notes on Polyphase Substation Machinery: A. C. Eborall.

FRIDAY, March 15.

Royal Institution, at 9.

Institution of Mechanical Engineers, at 8.—Combined Trolley and Conduit Tramway Systems: A. N. Connett.

Epidemiological Society, at 8.30.—The Enteric Fever Mortality in Copenhagen from 1828-1898: Dr. N. P. Schierbeck.—The Effect of Sewerage and Water Supply upon the Behaviour of Enteric Fever in Buenos Ayres: Dr. J. T. R. Davison.

SATURDAY, March 16.

Royal Institution, at 3.—Sound and Vibrations: Lord Rayleigh, F.R.S.

MONDAY, March 18.

Society of Arts, at 8.—Electric Railways: Major P. Cardew.

Royal Geographical Society, at 4.30.—The Topography of South Victoria Land: L. C. Bernacchi.

Victoria Institute, at 4.30.—Religion and Art: Rev. T. Hunter Boyd.

Camera Club, at 8.15.—Discussion on Panoramic Photography.

TUESDAY, March 19.

Royal Institution, at 3.—The Cell as the Unit of Life: Dr. A. Macfadyen.

Zoological Society, at 8.30.—On New or Imperfectly-known Ostracoda, chiefly from a Collection in the Zoological Museum, Copenhagen: Dr. G. S. Brady, F.R.S.—On *Lemur mongoz* and *L. rubriventer*: Dr. C. I. Forsyth Major.—On the Hymenoptera collected in New Britain by Dr. Arthur Willey: P. Cameron.

Institution of Civil Engineers, at 8.—The Æsthetic Treatment of Bridge Structures: J. Husband.

Mineralogical Society, at 8.—Notes on an Occurrence of Minerals at Haddam Neck, Connecticut, U.S.A.: H. L. Bowman.—On Calaverite from the Cripple Creek District, Colorado, U.S.A.: G. F. Herbert Smith.—On the Arrangement of the Chemical Atoms in Boracite and Cassiterite: W. Barlow.

Royal Statistical Society, at 5.—Results of State, Municipal, and Organised Private Action on the Housing of the Working Classes in London and in other Large Cities in the United Kingdom: Dr. John F. J. Sykes.

Royal Photographic Society, at 8.—Photographing Stained Glass by the Three-colour Process: Chas. B. Howdill.

WEDNESDAY, March 20.

Society of Arts, at 8.—Evolution of Form in English Silver Plate: Percy T. Macquoid.

Geological Society, at 8.—On a Remarkable Volcanic Vent of Tertiary Age in the Island of Arran, enclosing Mesozoic Fossiliferous Rocks: B. N. Peach, F.R.S., W. Gunn, and E. T. Newton, F.R.S.—On the Character of the Upper Coal Measures of North Staffordshire; their Comparison with those of Denbighshire, South Staffordshire, and Nottinghamshire; and their Relation to the Productive Series: Walcot Gibson.

Anthropological Institute (Albemarle Street), at 8.—Joint Meeting with the Folklore Society.—Sand Ropes and other Futile Tasks: G. M. Godden.

Royal Meteorological Society, at 7.30.—Climate, and the Effects of Climate: Dr. Hugh Robert Mill.

Royal Microscopical Society, at 8.—The Metallography of Iron and Steel: Wm. H. Merrett.

Institution of Mining and Metallurgy, at 8.—Annual General Meeting.—Followed by: The Electric Power Station at the Pierrefitte Mine: E. Henry Davies.—(1) Note on Smelting Lead-Copper Ore; (2) Note on Lead Assaying: P. R. Robert.

THURSDAY, March 21.

Royal Society, at 4.30.—Studies in Visual Sensation (Croonian Lecture): Prof. C. Lloyd Morgan, F.R.S.

Linnean Society, at 8.—On the Intestinal Tract of Birds, and the Valuation and Nomenclature of Zoological Characters: P. Chalmers Mitchell.

Chemical Society, at 8.—Researches on Morphine, Part II: S. B. Schryver and F. H. Lees.—The Constitution of Pilocarpine, Part II.: H. A. D. Jowett.—Note on the Latent Heats of Evaporation of Liquids: Holland Crompton.—(1) Action of Dry Silver Oxide and Ethyl Iodide on Benzoylacetic Ester, Desoxybenzoin, and Benzyl Cyanide; (2) Alkylation of Acylarylamines: G. D. Lander.

Camera Club, at 8.15.—Yorkshire Caves and Waterfalls: T. C. Hepworth.

FRIDAY, March 22.

Royal Institution, at 9.—Some Recent Work on Diffusion: Dr. Horace Brown, F.R.S.

Physical Society (University College, Gower Street), at 5.—On the Expansion of Silica: Prof. Callendar, F.R.S.—The Spectroscopic Apparatus at University College: Dr. E. C. C. Baly.

Institution of Civil Engineers, at 8.—The Hunslet Railway and Bridge over the River Aire: O. L. McDermott.

SATURDAY, March 23.

Royal Institution, at 3.—Sound and Vibrations: Lord Rayleigh, F.R.S

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